Automotive
Energy & Power Analysis
Field Service
Environmental
Research & Development

DEWE-LPAD modules

Technical reference manual

ISO9001

... the precision signal conditioning company

worldwide
DEWETRON
www.dewetron.com

Copyright © DEWETRON elektronische Messgeraete Ges.m.b.H.

This document contains information which is protected by copyright. All rights are reserved. Reproduction, adaptation, or translation without prior written permission is prohibited, except as allowed under the copyright laws.

All trademarks and registered trademarks are acknowledged to be the property of their owners.

Content

General Information, Safety Instructions **5**
Warranty Information 5
Support 5
Printing History 5
Safety symbols in the manual 6
Safety instructions for all DEWETRON systems 7
Environmental Considerations 8
Product End-of-Life Handling 8
System and Components Recycling 8
Restriction of Hazardous Substances 8
LPAD modules **9**
Hardware specifications 9
Power supply 9
How to use LPAD modules in DEWESoft 10
Installation 10
Install the ETAS/LPAD drivers 10
Install the IP-configurator 10
Check your TCP/IP settings 11
DEWESoft 6.5 settings 13
DEWESoft Setup 15
LPAD V4 channel setup 16
LPAD TH8 channel setup 17
Loading setup 17
Operating the modules with AD card 18

Notice

The information contained in this document is subject to change without notice.

DEWETRON elektronische Messgeraete Ges.m.b.H. (DEWETRON) shall not be liable for any errors contained in this document. DEWETRON MAKES NO WARRANTIES OF ANY KIND WITH REGARD TO THIS DOCUMENT, WHETHER EXPRESS OR IMPLIED. DEWETRON SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. DEWETRON shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory, in connection with the furnishing of this document or the use of the information in this document.

Warranty Information

A copy of the specific warranty terms applicable to your DEWETRON product and replacement parts can be obtained from your local sales and service office.

Support

For any support please contact your local distributor first or DEWETRON directly.

For Asia and Europe, please contact:

DEWETRON Ges.m.b.H.
Parkring 4
A-8074 Graz-Grambach
AUSTRIA
Tel.: +43 316 3070
Fax: +43 316 307090
Email: support@dewetron.com
Web: http://www.dewetron.com

The telephone hotline is available
Monday to Friday between
08:00 and 17:00 CET (GMT +1:00)

For the Americas, please contact:

DEWETRON, Inc.
PO Box 1460
Charlestown, RI 02813
U.S.A.
Tel.: +1 401 364 9464
Toll-free: +1 877 431 5166
Fax: +1 401 364 8565
Email: support@dewamerica.com
Web: http://www.dewamerica.com

The telephone hotline is available
Monday to Friday between
08:00 and 17:00 GST (GMT -5:00)

Restricted Rights Legend

Use austrian law for duplication or disclosure.

DEWETRON GesmbH
Parkring 4
A-8074 Graz-Grambach / Austria

Printing History

Please refer to the page bottom for printing version.

Copyright © DEWETRON elektronische Messgeraete Ges.m.b.H.

This document contains information which is protected by copyright. All rights are reserved. Reproduction, adaptation, or translation without prior written permission is prohibited, except as allowed under the copyright laws.

All trademarks and registered trademarks are acknowledged to be the property of their owners.

Safety instructions

Safety symbols in the manual

	Indicates hazardous voltages.

WARNING	*Calls attention to a procedure, practice, or condition that could cause bodily injury or death.*

CAUTION	*Calls attention to a procedure, practice, or condition that could possibly cause damage to equipment or permanent loss of data.*

WARNINGS

The following general safety precautions must be observed during all phases of operation, service, and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. DEWETRON Elektronische Messgeraete Ges.m.b.H. assumes no liability for the customer's failure to comply with these requirements.

All accessories shown in this document are available as option and will not be shipped as standard parts.

Safety instructions for all DEWETRON systems

- The DEWETRON data acquisition systems may only be installed by experts.
- Read your manual before operating the system.
- Observe local laws when using the instrument.
- Ground the equipment: For Safety Class 1 equipment (equipment having a protective earth terminal), a non interruptible safety earth ground must be provided from the mains power source to the product input wiring terminals or supplied power cable.
- DO NOT operate the product in an explosive atmosphere or in the presence of flammable gases or fumes and do not bring the system in contact with water.
- DO NOT operate damaged equipment: Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until safe operation can be verified by service-trained personnel. If necessary, return the product to a DEWETRON sales and service office for service and repair to ensure that safety features are maintained.
- Keep away from live circuits: Operating personnel must not remove equipment covers or shields. Procedures involving the removal of covers or shields are for use by service-trained personnel only. Under certain conditions, dangerous voltages may exist even with the equipment switched off. To avoid dangerous electrical shock, DO NOT perform procedures involving cover or shield removal unless you are qualified to do so.
- No modifications are allowed at the instrument. The fuse in the power module has to be replaced by the same type. For continued protection against fire, replace the line fuse(s) only with fuse(s) of the same voltage and current rating and type. DO NOT use repaired fuses or short-circuited fuse holder labels and print on the power module may not be removed.
- DO NOT service or adjust alone. Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.
- DO NOT substitute parts or modify equipment: Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification to the product. Return the product to a DEWETRON sales and service office for service and repair to ensure that safety features are maintained.
- Before opening the instrument (experts only) or exchanging the fuse in the power module disconnect power!
- Don’t touch internal wiring!
- Don’t use higher supply voltage than specified and take care of the correct polarity, otherwise the system will be damaged!
- Use only original plugs and cables for harnessing.
- Install filler-panels in unused slots.
- The power-cable and -connector serve as Power-Breaker. The cable must not exceed 10 feet, disconnect function must be possible without tools.
- Keep the ventilation slots free and check them frequently to avoid an overheating of the system. The cleaning interval of the filter pads depends on the environmental conditions.
- Safety of the operator and the unit depend on following these rules.
- DEWETRON is not responsible for any damage or injury that could result from improper connection or misuse!

General Information

Environmental Considerations

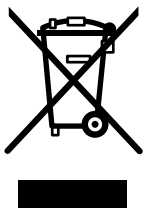
Information about the environmental impact of the product.

Product End-of-Life Handling

Observe the following guidelines when recycling a DEWETRON system:

System and Components Recycling

Production of these components required the extraction and use of natural resources. The substances contained in the system could be harmful to your health and to the environment if the system is improperly handled at it's end of life! Please recycle this product in an appropriate way to avoid an unnecessary pollution of the environment and to keep natural resources.



This symbol indicates that this system complies with the European Union’s requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). Please find further informations about recycling on the DEWETRON web site www.dewetron.com

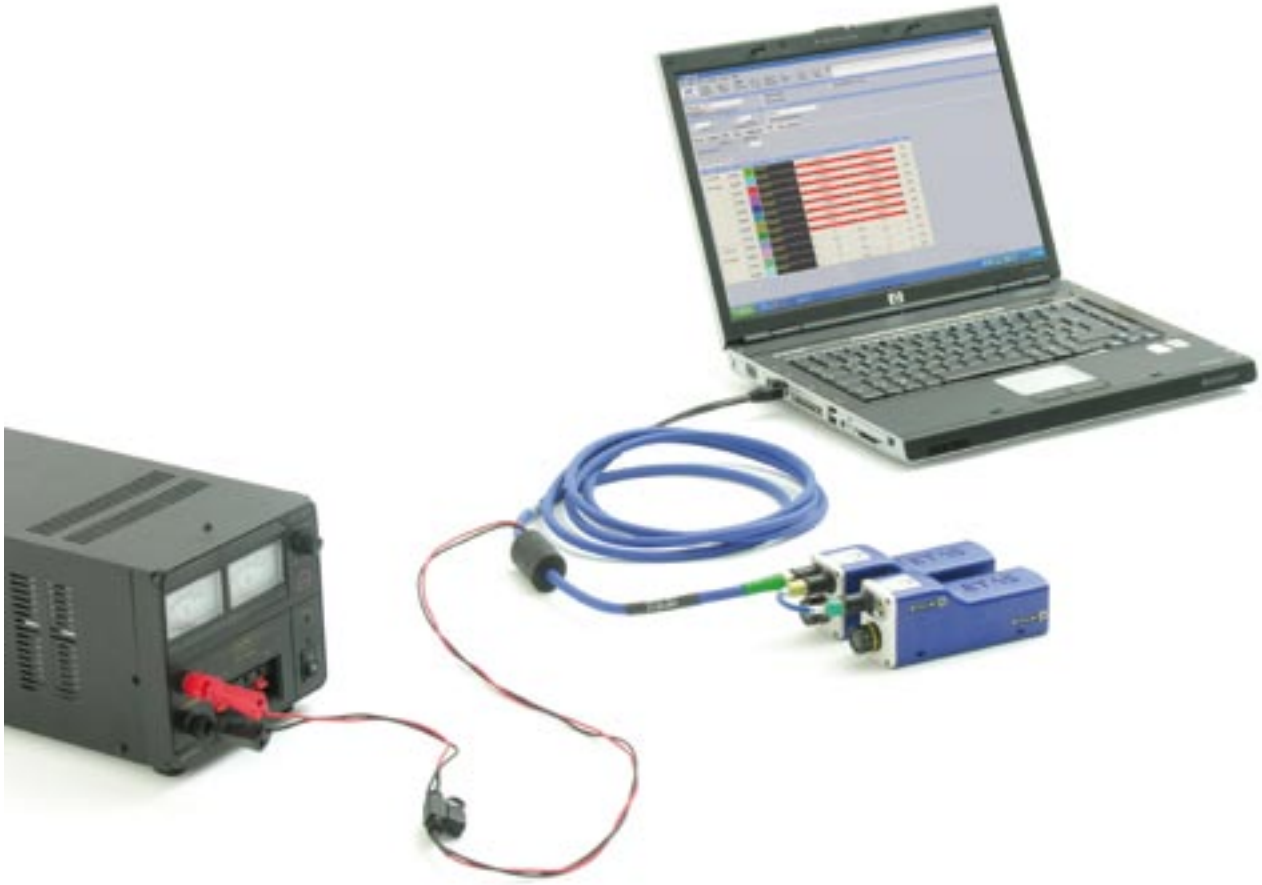
Restriction of Hazardous Substances

This product has been classified as Monitoring and Control equipment, and is outside the scope of the 2002/95/EC RoHS Directive. This product is known to contain lead.

Hardware specifications

DEWETRON would like to point out that the DEWE-LPAD-TH8 module are identical in construction to the ETAS ES420 thermo module and also the DEWE-LPAD-V4 module is constructed in the same way like the ETAS ES411 voltage module.

For the hardware specifications please refer to the ETAS ES411 (LPAD V4) and ETAS ES420 (LPAD TH8) Manual.



Power supply

Operating voltage: DC 5 to 50V (-40°C to 85°C)

- Power consumption LPAD V4 (operation, no sensors): typ. 2W at 12V
- Power consumption LPAD V4 (operation, all channels loaded with 30mA): typ. 4,6W at 12V
- Power consumption LPAD TH8 (operation): typ. 2W at 12V

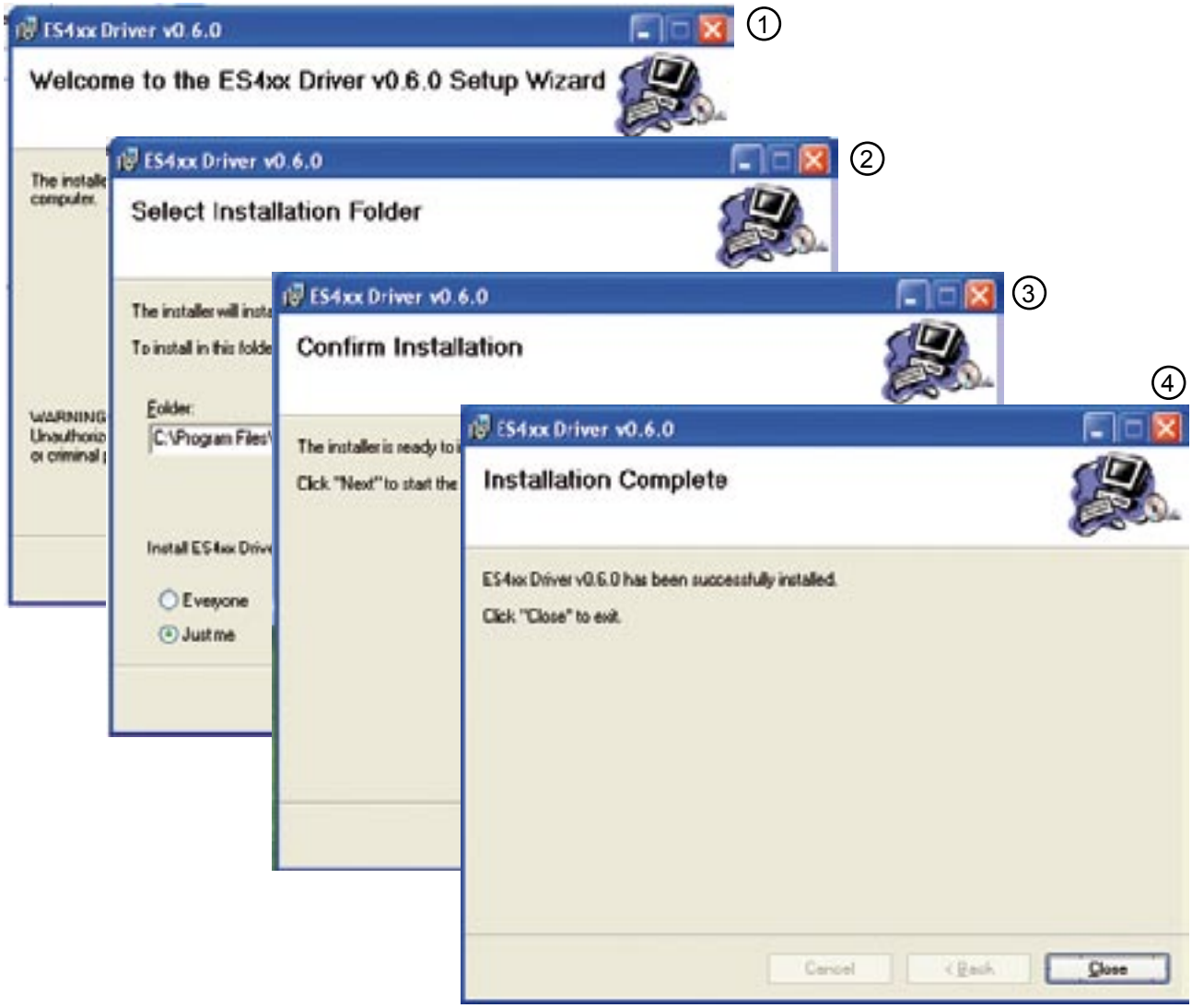
LPAD modules

How to use LPAD modules in DEWESoft

Installation

Install the ETAS/LPAD drivers

The driver is delivered on the System DVD D:\Install\Drivers\X_Various\LPAD-Module where D:\ is your corresponding DVD drive. Run the setup.exe and follow the wizard for proper installation.

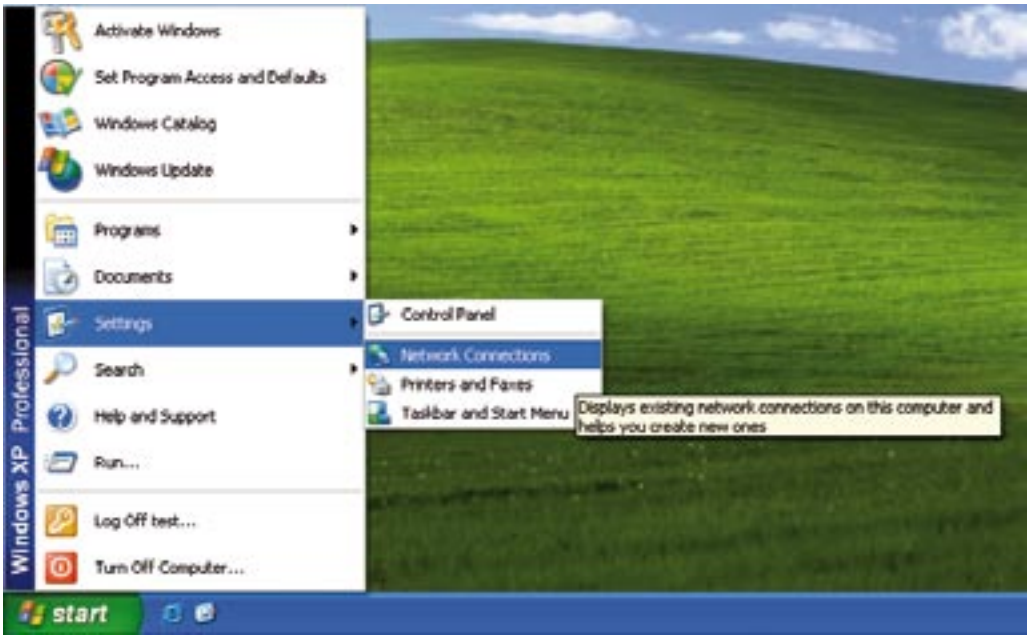


Install the IP-configurator

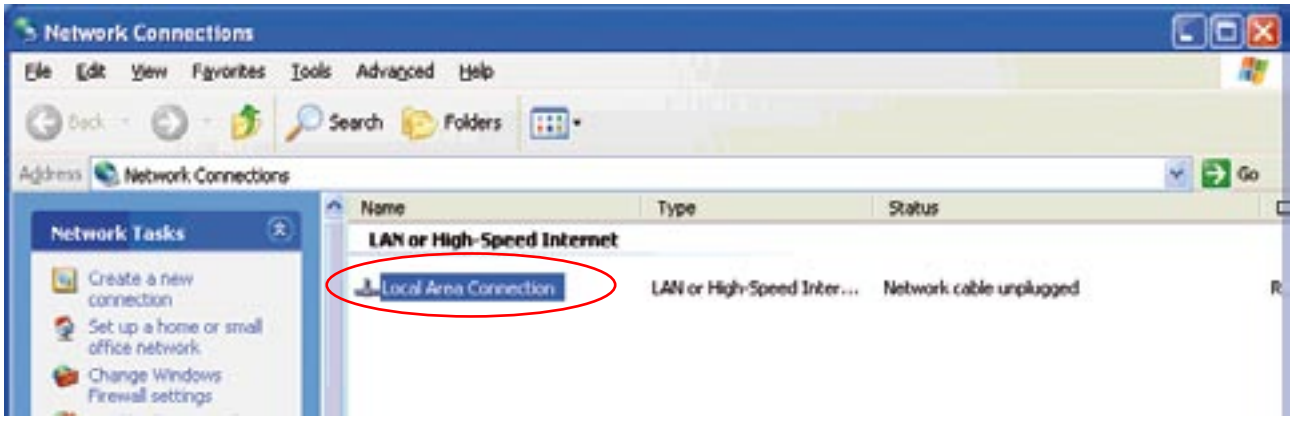
The IP configurator is delivered on the System CD D:\Install\Drivers\X_Various\LPAD-Module\IP Config where D:\ is your corresponding DVD drive.
Run Silent-Install.bat.

Check your TCP/IP settings

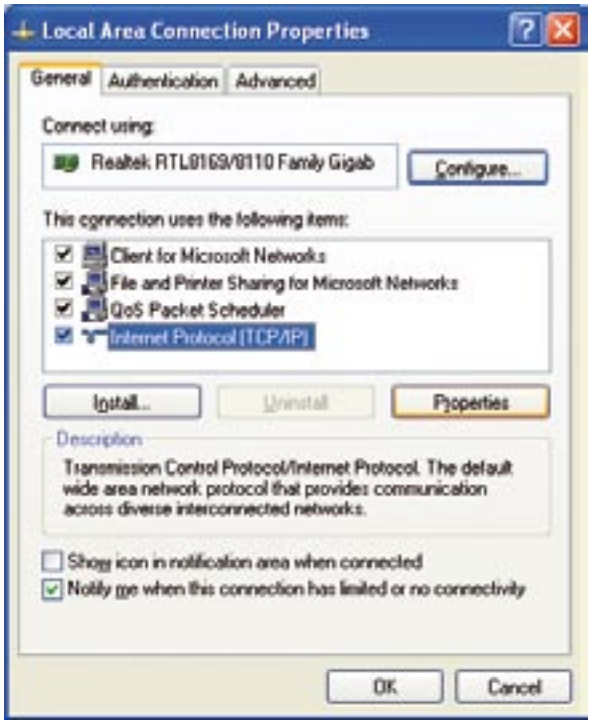
First of all please make sure to turn off your firewall. The firewall can cause problems during the operation of the LPAD modules.
Start menu → Settings → Network Connections

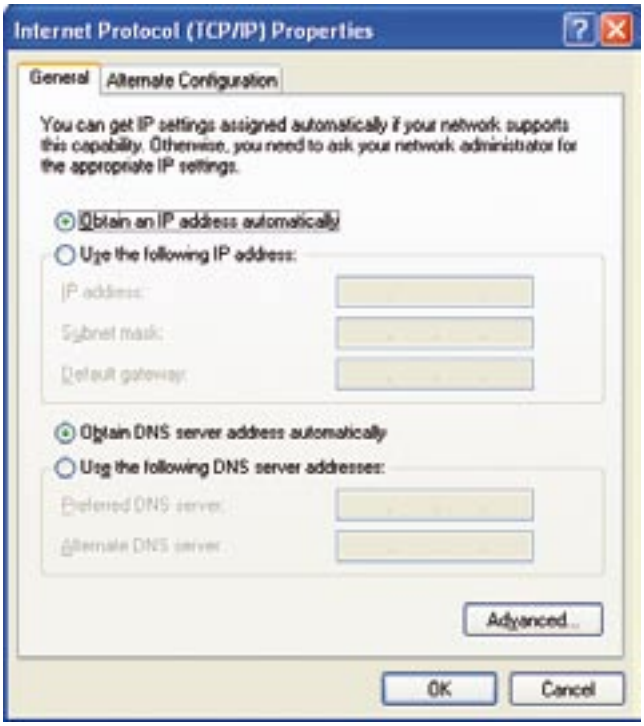


Double click on your Local area network, where you would like to plug your LPAD modules



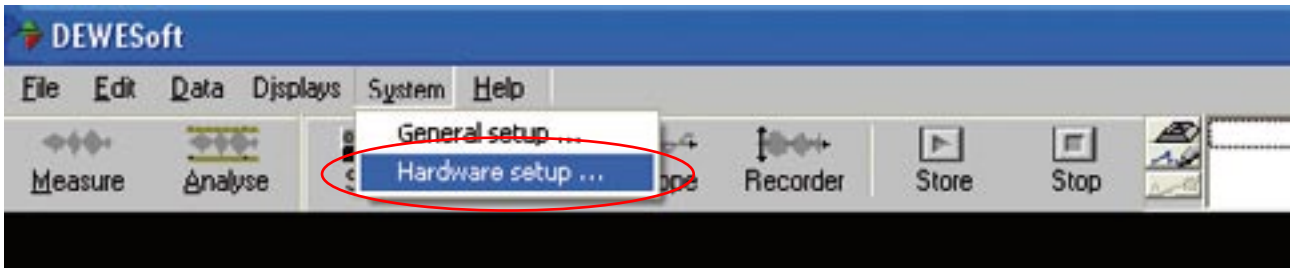
Select “Internet Protocol (TCP/IP)” and click on “Properties”. Then select “Optain an IP address automatically”.



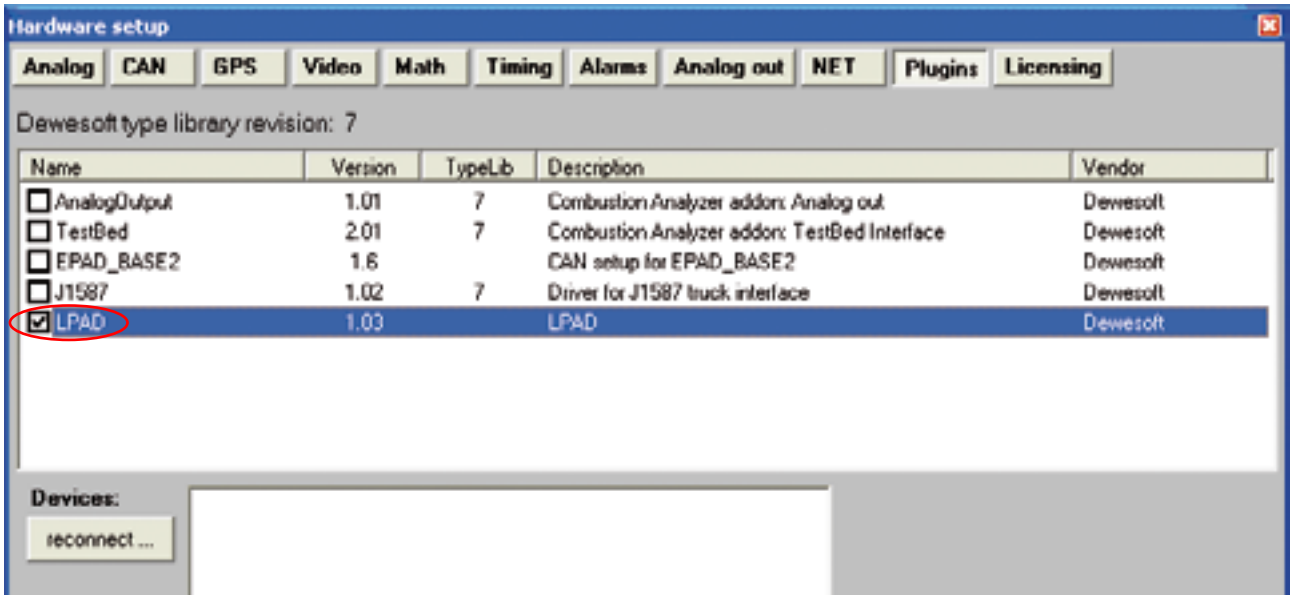

Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

DEWESoft 6.5 settings

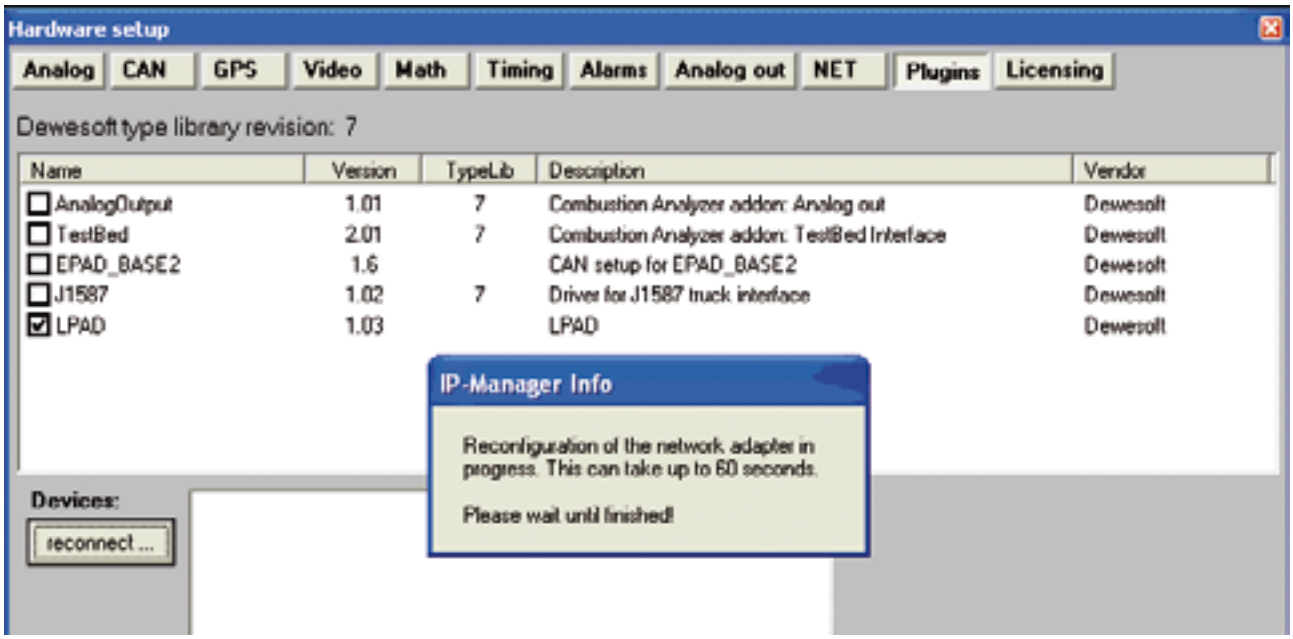
LPAD works as DEWESoft plugin and must be activated. System → Hardware setup Plugins.



Tick the LPAD Plugin.

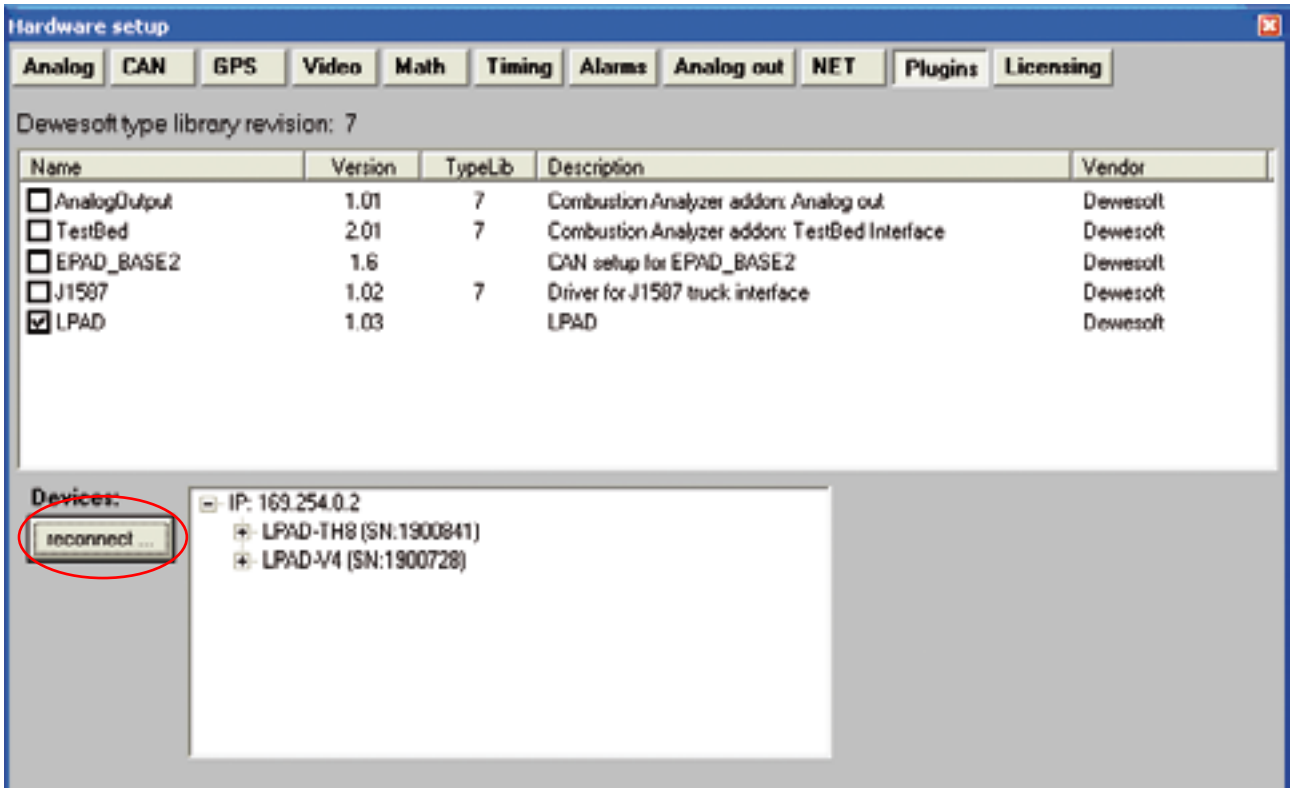


Connect your LPAD module chains via the ethernet interface to your PC or laptop. Also keep in mind to connect your LPAD module chains to the power supply.
Now the IP configurator starts automatically.



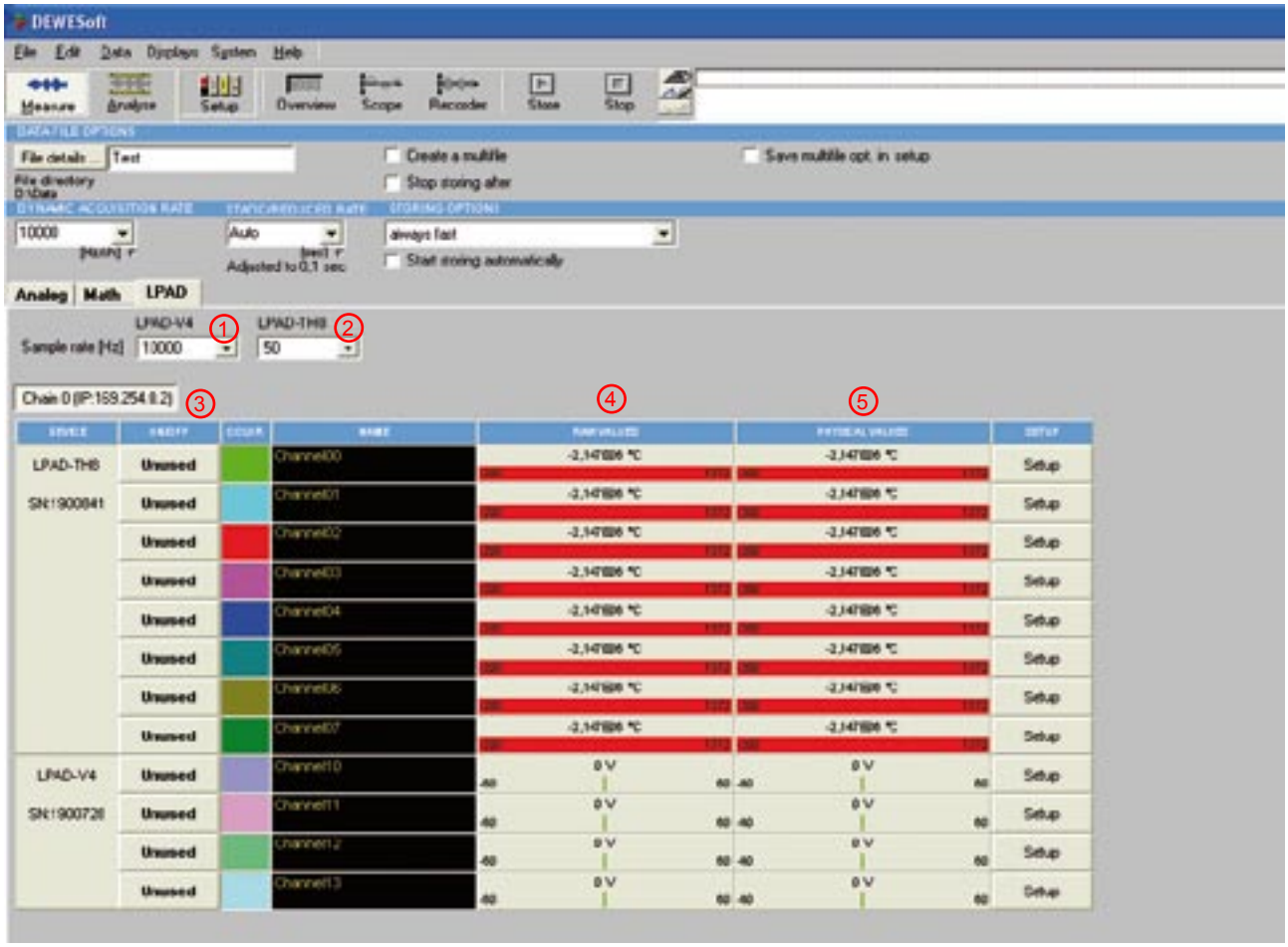
LPAD modules

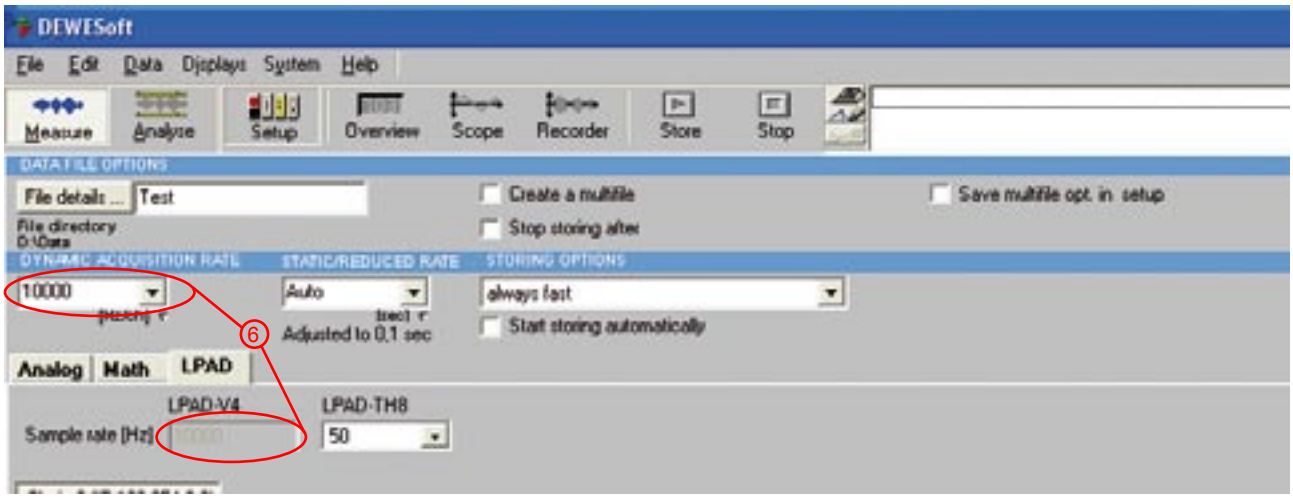
Now press reconnect and all connected chains and modules are displayed. If the hardware configuration changes in any way, just press the reconnect button again and the system will be automatically rescanned.



DEWESoft Setup

LPAD network can provide clock for DEWESoft. It will do so automatically if no other A/D hardware is connected and at least one LPAD V4 module is present. In this case the LPAD V4 channels will be synchronous and LPAD TH8 channels will work as asynchronous. If LPAD is not clock provider, all channels will work as asynchronous.



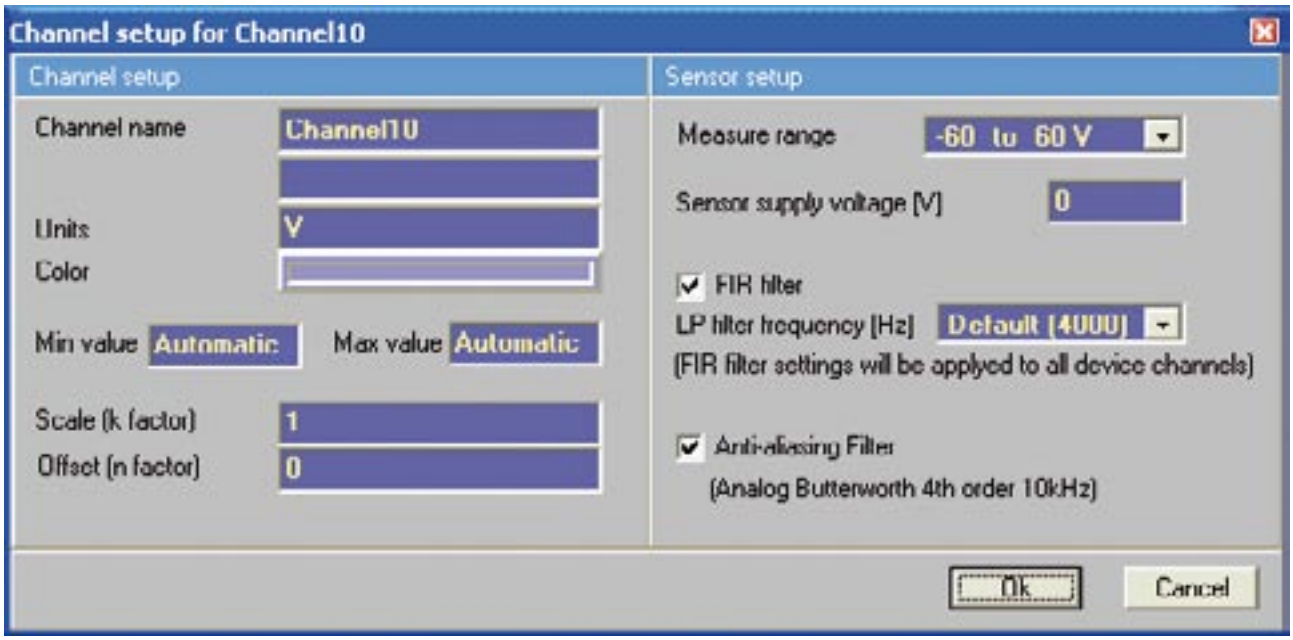


At the top there are two combo boxes. One for LPAD V4 channels sample rate (1) and one for LPAD TH8 channels sample rate (2). When LPAD is clock provider the LPAD V4 sample rate combo box is disabled. The master sample rate setting dictates the sample rate for LPAD V4 channels (6).

LPAD modules

Below are buttons representing LPAD chains (3). Press the chain button to get to the table of its modules and channels. In the table you can see and change the basic channels settings (select and unselect them and change their name and color), and see actual raw values of signals (4) and calculated physical values (5). Take in consideration that the sample rate of setup acquisition is only 100Hz, so some values can be missed.

LPAD V4 channel setup



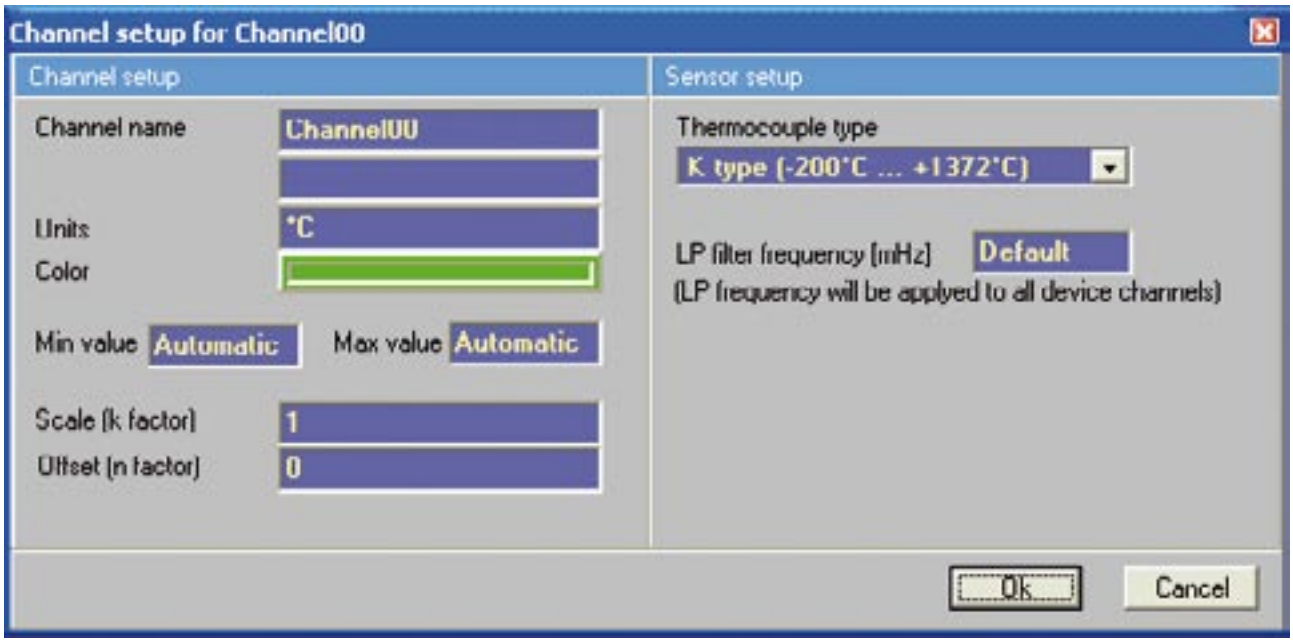
In LPAD V4 channel setup the measure voltage, sensor supply voltage, a FIR LP filter frequency and a anti-aliasing filter can be set. Due to all channels are in one module, they have the same LP filter frequency. This means, if the LP frequency of one channel is changed, this frequency is applied to all other channels. Default value indicates the half of the sample rate frequency.

Refer to Dewesoft user manual for all the other (standard) settings.

Valid values:

-Input voltage: +/-60V, +/-10V, +/-1V, +/-100mV
-Sensor supply voltage: 3.5 – 15V (0 means that supply is turned off)

LPAD TH8 channel setup



In LPAD TH8 channel setup the thermocouple type and the LP filter frequency can be set. Due to all channels are in one module, they have the same LP filter frequency. This means, if the LP frequency of one channel is changed, this frequency is applied to all other channels. Default means that the LP frequency is set to the half of the sample rate. Refer to DEWESoft user manual for all the other (standard) settings.

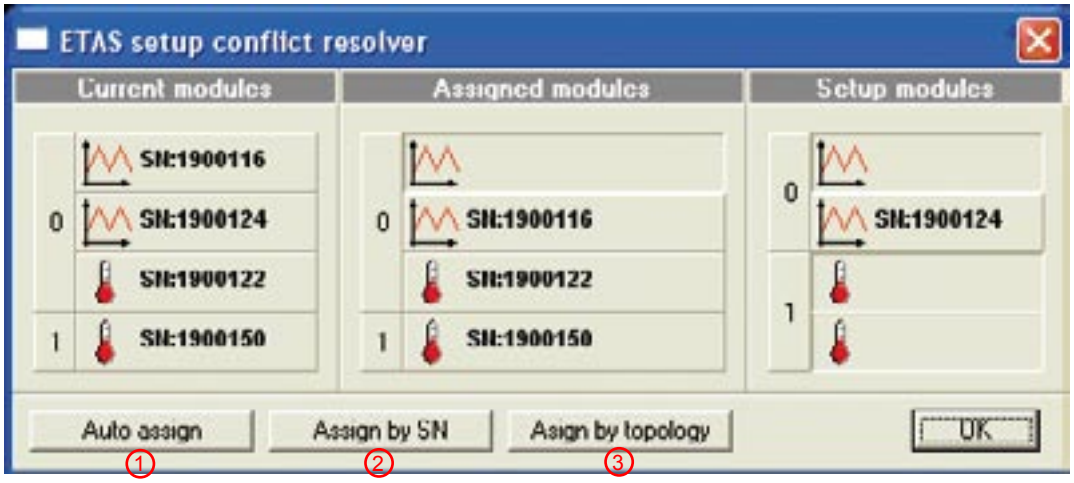
Valid values:

-Thermocouple type: for now just type K is supported.
-LP filter frequency: 50 – 5000 mHz (0 will set it to default)

Loading setup

The channel settings will be stored to DEWESoft setup file. Since the LPAD modules are very flexible in configuration, it is likely to have the module mix up or some modules will be replaced by different one. Setup is saved by chain topology and modules serial numbers.

When loading LPAD setup to a different LPAD configuration, the system first tries to find the current modules SN in setup at load setup according to them. If this way is not completely successful the LPAD setup conflict solver will pop up.

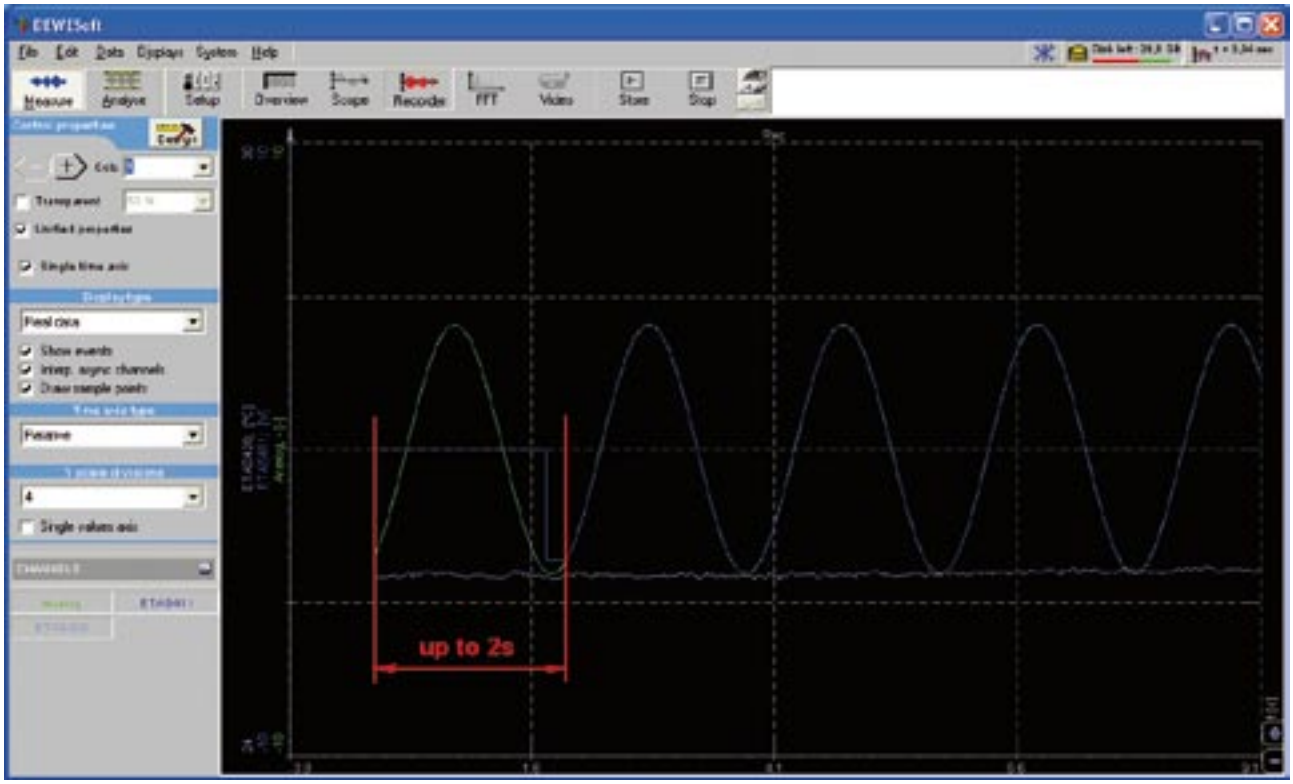


LPAD modules

In this window different setup modules to current modules can be set. Just drag them to desired location in the setup. There are three buttons to help you do it quickly. Auto assign (1) will try to connect remained unassigned modules together (first unassigned current module with first unassigned setup module of the same type and so on), Assign by SN (2) will try to assigned modules together by SN and Assign by topology (3) will try to assigned modules together by topology (first current module with first setup module of the same type and so on).

Operating the modules with AD card

On start of acquisition the LPAD V4 (voltage) signals are missing for up to 2 seconds. This is a known issue caused by delay in startup of acquisition. The LPAD TH8 modules (temperature modules) are unaffected by this issue.



The data between analog AD channels and ES400 is nicely synchronized – even though there is no hardware clock synchronization. The time delay is below 1 ms.

up to 0.5ms

LDAP modules

Notes